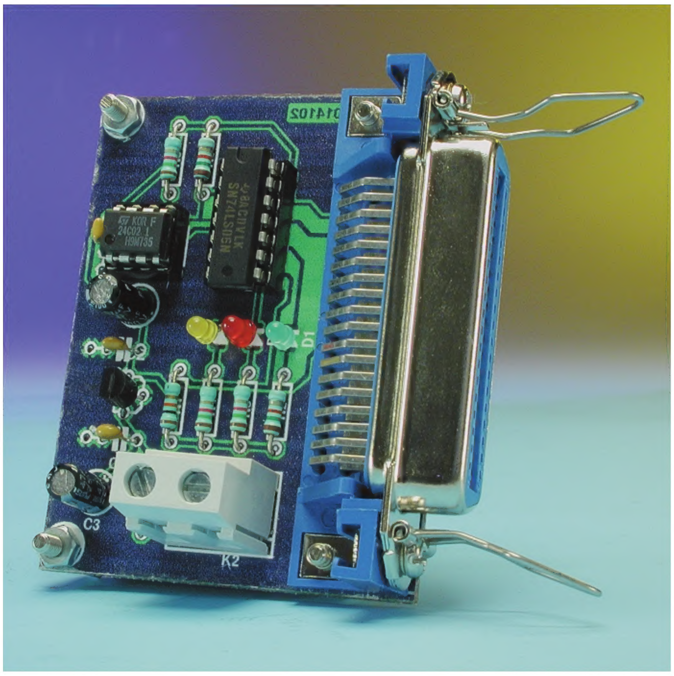
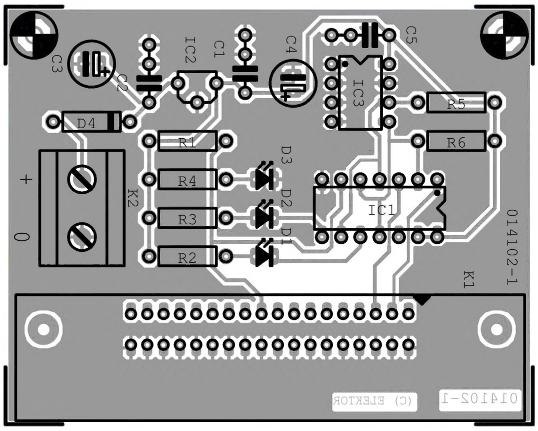
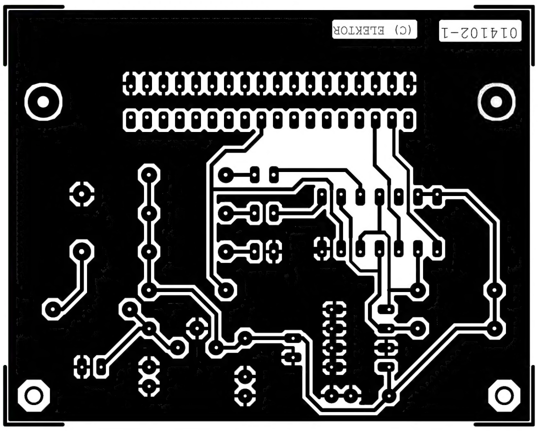
# Simple EEPROM Programmer

## 023







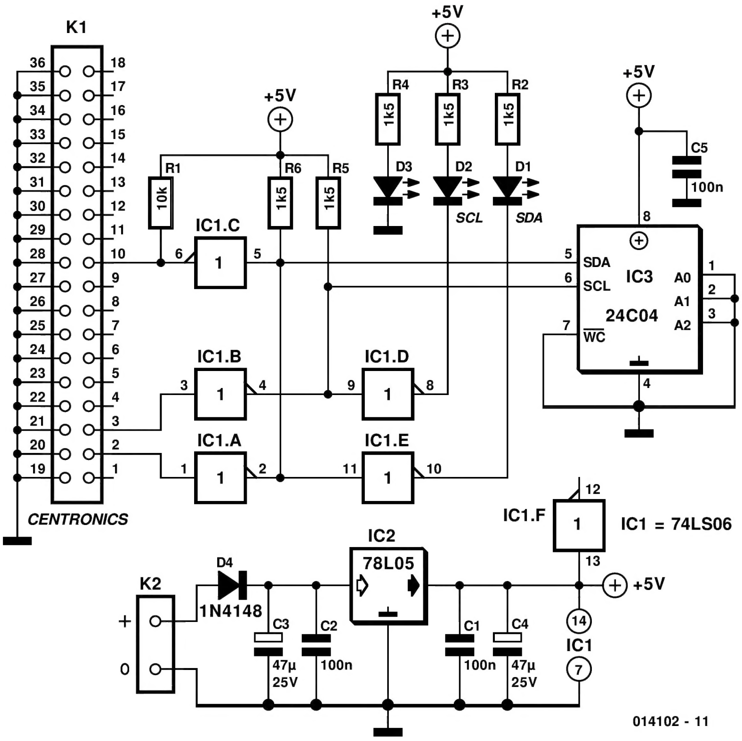
R. Weber

An extremely popular programmer for the PIC16C84 microcontroller has already appeared in Elektor Electronics (Summer Circuits, 1998): that design used the parallel interface and the popular PIP-02 shareware from Silicon Studio, together with a special driver written by Dave Tait. PIP-02 is capable of programming not just PICs but also EEPROMs equipped with an I$^2$C interface.

This works with essentially the same hardware as we presented then, and the circuit in **Figure 1** shows how the device to be programmed can be connected. The connection for the special programming voltage has gone, since the EEPROM does not require it.

What remains is a hex inverter with open-collector outputs (type 74LS06), which buffers the serial clock SCL before taking it to the appropriate EEPROM pin. The serial data line is, in contrast to the clock signal, bidirectional. For this reason two separate buffers are required, IC1B for signals from PC to EEPROM and IC1C for the reverse path.

Since a PCB is hardly worthwhile for just a couple of ICs and a connector, we have added a little extra: two spare inverters from the 74LS06 are connected to the two bus lines and drive LEDs, which allow the programming process to be monitored. A third LED is connected to the supply to verify operation. And



finally, IC2 and the capacitors provide a regulated power supply on the PCB so that an ordinary (9 V) mains adaptor can be connected to K2 to power the programmer. Nothing can go wrong if the supply is connected backwards: D4 protects the hardware (and the PC) from damage.

The PIP-02 software, along with the **dtait.exe** driver, is available on the Internet from Dave Tait's very informative website www.thepicarchive.cwc.net/dtpa/links.html and of course it is all free. Although the link to Silicon Studio is broken, the software (along with much else) is archived on Dave's site.

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## COMPONENTS LIST

**Resistors:**
R1 = 10kΩ
R2-R6 = 1kΩ5

**Capacitors:**
C1,C2,C5 = 100nF
C3 = 47µF 25V
C4 = 4µF7 25V

**Semiconductors:**
D1 = LED, green, low current
D2 = LED, red, low current
D3 = LED, yellow, low current
D4 = 1N4148
IC1 = 74LS06
IC2 = 78L05
IC3 = 8-way IC socket

**Miscellaneous:**
K1 = Centronics connector, angled pins, PCB mount
K2 = 2-way PCB terminal block, lead pitch 7.5mm